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09/885,439	06/19/2001	Cornelius F. Ivory	WSUR117329	3241

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EXAMINER

BARTON, JEFFREY THOMAS

ART UNIT	PAPER NUMBER
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1753

DATE MAILED: 03/10/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/885,439

Applicant(s)

IVORY ET AL.

Examiner

Jeffrey T. Barton

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 06 January 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-5, 8, 17, 47-51, 58, 63 and 69-77 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5, 8, 17, 47-51, 58, 63 and 69-77 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Response to Amendment***

1. The amendment filed on 6 January 2005 does not place the application in condition for allowance.

***Status of Objections and Rejections Pending Since the***

***Office Action of 1 October 2004***

2. All rejections of claims 57 and 64 are withdrawn due to the cancellation of the claims.
3. The rejection of claims 1-3, 8, 17, 47-51, 63, and 69-71 under 35 U.S.C. §102(b) as anticipated by Koegler et al is maintained.
4. The rejection of claims 4, 5, 58, 72, 74, and 76 under 35 U.S.C. §103(a) as obvious over Koegler et al in view of Ivory et al is maintained.
5. The rejection of claim 73 under 35 U.S.C. §103(a) as obvious over Koegler et al in view of Ivory et al and Hurd is maintained.
6. The rejection of claim 75 under 35 U.S.C. §103(a) as obvious over Koegler et al in view of Ivory et al and Arai is maintained.
7. The rejection of claim 77 under 35 U.S.C. §103(a) as obvious over Koegler et al in view of Ivory et al and Cabilly et al is maintained.
8. The various rejections of claims 1-5, 8, 17, 47-51, 58, 63, and 69-77 under the doctrine of obviousness-type double patenting are maintained.

***Claim Objections***

9. Claims 58, 63, and 69 are objected to because they depend from cancelled claims. Claims 58 and 63 are treated herein as though they incorporated all limitations of cancelled claim 57, and claim 69 as though it incorporated all limitations of cancelled claim 64. Appropriate correction is required.

***Claim Rejections - 35 USC § 102 (From Office Action of 1 October 2004)***

10. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

11. Claims 1-3, 8, 17, 47-51, 63, and 69-71 are rejected under 35 U.S.C. 102(b) as being anticipated by Koegler et al. (*Biotechnol. Prog.* 1996)

Addressing claims 1 and 70, Koegler et al disclose a device for focusing charged solute (Figure 7), comprising: a first chamber for receiving a liquid medium (Inside the dialysis tubing) having an inlet and outlet for fluid flow into and out of the chamber (Indicated by arrows "Buffer and Protein" and "To Detector & Collection"); a second chamber (Outside the dialysis tubing) comprising an electrode array (Two electrodes is a plurality, see definition in specification Page 7, line 33 - Page 8, line 1; also see Future Directions section) having an inlet and outlet for fluid flow into and out of the chamber (Indicated by arrows, Recirculating Electrolyte (& Cooling)); a porous material separating the first and second chambers (dialysis tubing, Equipment section, 1<sup>st</sup>

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paragraph); and means for dynamically controlling the voltage applied to the electrode array (Future Directions section)

Addressing claim 2, Koegler et al disclose the first and second chambers being in liquid communication. (Dialysis tubing allows aqueous liquid flow)

Addressing claim 3, Koegler et al disclose the first chamber being in electrical communication with the electrode array. (Figure 2 and caption)

Addressing claim 8, Koegler et al disclose the electrode array generating an electric field gradient profile. (Figure 2)

Addressing claim 17, Koegler et al disclose the device comprising first and second conduits for introducing and exiting fluid media from the first chamber. (Figure 7, indicated by arrows; details in 2<sup>nd</sup> - 4<sup>th</sup> paragraphs of Equipment section)

Addressing claims 47 and 71, Koegler et al disclose a method for focusing a charged solute in a fluid medium comprising: introducing a charged solute into a fluid medium, wherein the fluid medium is contained in a device according to claim 1 (Experiments section, 1<sup>st</sup> - 4<sup>th</sup> paragraphs); and applying an electric field gradient to the charged solute in the fluid medium to cause the charged solute to focus in a region of the medium. (Experiments section, 3<sup>rd</sup> and 4<sup>th</sup> paragraphs)

Addressing claim 48, Koegler et al disclose the first liquid being a buffer. (Experiments section, 3<sup>rd</sup> paragraph) They also refer to the flow of this buffer as elution. (5<sup>th</sup> paragraph)

Addressing claim 49, Koegler et al disclose the second liquid being a coolant buffer (Figure 7, arrow label)

Addressing claims 50 and 51, Kogler et al disclose the first liquid being either the same or different from the second liquid. (Experiments section, 2<sup>nd</sup> paragraph; describe buffer mismatch and contrast corresponding results to results without the mismatch (i.e. identical buffers))

Addressing claims 63 and 69, Kogler et al disclose a method for focusing a charged solute or separating charged solutes comprising: applying a charged solute to a fluid medium; applying a hydrodynamic force to the solute in the fluid medium; and opposing the hydrodynamic force with an electric field gradient to provide solutes focused in the fluid medium in order of their electrophoretic mobilities (All in Separation of Myoglobins section, 2<sup>nd</sup> paragraph); wherein the electric field gradient is generated by an electrode array (Figure 7; Future Directions section), and wherein the electric field gradient is dynamically controlled (Future Directions section) They also disclose focusing and separation of proteins. (Separation of Myoglobins section)

***Claim Rejections - 35 USC § 103 (From Office Action of 1 October 2004)***

12. Claims 4, 5, and 58 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kogler et al (*Biotechnol. Prog.* 1996) in view of Ivory et al. (U.S. Patent No. 5,298,143)

Kogler et al disclose devices and methods as described above in addressing claim 1. Relevant to claim 58, they also disclose a method meeting the limitations of cancelled claim 57, which was discussed in addressing claims 63 and 69. Relevant to

claim 5, they also disclose individual control of electrodes in their array. (Future Directions section, "independent electrodes")

Koegler et al do not explicitly disclose a device or method in which a plurality of electrodes is arranged linearly along an axis parallel to the direction of migration of the solute. However, they do disclose using arrays of independent electrodes arranged outside the separation chamber. (Future Directions section)

Ivory et al disclose a similar gradient focusing device (Figure 16), which uses a linear array of electrodes (422-424) arranged along an axis parallel to the direction of solute migration.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the device and method of Koegler et al by incorporating an array of electrodes arranged linearly along the outside of the separation chamber, as taught by Ivory et al, because it would provide greater control of the electric field gradient, and Koegler et al suggested the use of such electrode arrays.

13. Claims 72, 74, and 76 are rejected under 35 U.S.C. 103(a) as being unpatentable over Koegler et al (*Biotechnol. Prog.* 1996) in view of Ivory et al. (U.S. Patent No. 5,298,143)

Relevant to claim 72, Koegler et al disclose a system for focusing a solute, comprising: a device according to claim 1 (See paragraph 11 above); an analytical instrument (Spectrophotometer; Equipment section, 4<sup>th</sup> paragraph); and an interface

intermediate the device and the analytical instrument (Rainin flangeless fittings, Equipment section, 4<sup>th</sup> paragraph)

Relevant to claim 76, Koegler et al disclose the analytical instrument being an optical detection device. (Spectrophotometer)

Koegler et al do not explicitly disclose the system comprising a controller comprising a plurality of controller units in communication with the electrode array (Claim 72), nor do they disclose the controllers dynamically monitoring and setting the voltage at each electrode in response to signals from an operator. (Claim 74)

Ivory et al disclose a similar gradient focusing device (Figure 16) which uses a controller comprising a plurality of controller units in communication with the electrode array. (Column 8, line 55 - Column 9, line 53) Relevant to claim 74, they also disclose the controller dynamically monitoring and setting the voltage in response to signals from an operator. (Column 9, lines 26-31)

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the device and method of Koegler et al by using a controller with a plurality of controller units in communication with the electrodes, as taught by Ivory et al, because it would provide the independent electrode control described by Koegler et al. (Future Direction section)

It would also have been obvious to one having ordinary skill in the art at the time the invention was made to provide a controller that dynamically monitors and sets the voltage in response to operator signals, as taught by Ivory et al, because it would provide convenient, precisely controlled device operation.



14. Claim 73 is rejected under 35 U.S.C. 103(a) as being unpatentable over Koegler et al (*Biotechnol. Prog.* 1996) and Ivory et al. (U.S. Patent No. 5,298,143) as applied to claim 72 above, and further in view of Hurd. (U.S. patent No. 4,670,119)

Koegler et al and Ivory et al disclose a combined system as described above in addressing claim 72.

Neither Koegler et al nor Ivory et al disclose a third chamber with a second electrode array and fluid inlets and outlets, separated from the first chamber by a second porous material, wherein the first and second porous materials are on opposite sides of the first chamber, and electrodes in the two arrays form pairs.

Hurd discloses a similar focusing device (Figure 5), in which there are two electrode arrays (22) disposed in an electrolyte chamber (10) each array being separated from the separation chamber (20) by a porous membrane (24), with electrodes in the array forming pairs (Column 9, lines 64-67), with the porous membranes (24) being on opposite sides of the separation chamber.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the combined system of Koegler et al and Ivory et al by providing an electrode geometry (i.e. pairs opposite each other, separated from the separation channel by oppositely-disposed membranes) as taught by Hurd, because it would provide an electric field gradient uniform in the channel cross section without requiring varying chamber width. It would also have been obvious to separate the electrode arrays into different chambers, because it would allow simpler construction of

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longitudinal inlets and outlets to the separation channel, of the type disclosed by Koegler et al (Figure 7).

15. Claim 75 is rejected under 35 U.S.C. 103(a) as being unpatentable over Koegler et al (*Biotechnol. Prog.* 1996) and Ivory et al. (U.S. Patent No. 5,298,143) as applied to claim 72 above, and further in view of Arai.

Koegler et al and Ivory et al disclose a combined system as described above in addressing claim 72.

Neither Koegler et al nor Ivory et al disclose a controller that sets the voltage at each electrode in response to signals from an analytical instrument.

Arai discloses an electrophoretic device comprising a controller that provides voltages based on signals from analytical devices. (Column 5, line 21 - Column 6, line 22)

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the combined system of Koegler et al and Ivory et al by providing a controller that provides voltage control in response to signals from analytical devices, as taught by Arai, because it would allow system operation with minimal requirements for operator input.

16. Claim 77 is rejected under 35 U.S.C. 103(a) as being unpatentable over Koegler et al (*Biotechnol. Prog.* 1996) and Ivory et al. (U.S. Patent No. 5,298,143) as applied to claim 72 above, and further in view of Cabilly et al.

Koegler et al and Ivory et al disclose a combined system as described above in addressing claim 72. Koegler et al also disclose monitoring the progress of a separation using images taken at different times during the operation. (Figure 8)

Neither Koegler et al nor Ivory et al disclose the use of a video camera as an analytical instrument.

Cabilly et al disclose an electrophoresis apparatus that uses a video camera to record results of separations. (Column 4, lines 42-45)

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the combined system of Koegler et al and Ivory et al by recording the progress of a separation with a video camera, because it would give a full record of the separation progress and provide continuous data of the kind reported by Koegler et al. (Figure 8)

***Double Patenting (From Office Action of 1 October 2004)***

17. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

18. Claims 1-5, 8, 17, and 70 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 7-12 and 21 of U.S. Patent No. 6,277,258 in view of either Ivory et al (U.S. 5,298,143) or Koegler et al. (*Biotechnol. Prog.* 1996)

Claim 7 of U.S. Patent No. 6,277,258 claims a device including all limitations of instant claims 1 and 70 (First and second chambers defined by the troughs and the membrane), except the means for dynamically controlling the voltage applied to the electrode array.

Claims 8-12 and 21 of U.S. Patent No. 6,277,258 claim the same limitations given by instant claims 2-5, 8, and 17.

Ivory et al disclose a means for dynamically controlling the voltage applied to an electrode array in a similar device. (Column 8, line 55 - Column 9, line 53)

Koegler et al also disclose a means for dynamically controlling the voltage applied to an electrode array in another similar device. (Future Directions section)

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the device of Claims 7-12 and 21 of U.S. Patent No. 6,277,258 by providing a means of dynamic control of the electrode voltages, as taught by either Ivory et al or Koegler et al, because it would provide facile and precise control of electric field gradients in the device.

19. Claims 47-51 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 32-36 of U.S. Patent No.

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6,277,258 in view of either Ivory et al (U.S. 5,298,143) or Koegler et al (*Biotechnol. Prog.* 1996).

Claim 32 of U.S. Patent No. 6,277,258 claims a device including all limitations of instant claim 47 (First and second chambers defined by the troughs and the membrane), except the means for dynamically controlling the voltage applied to the electrode array.

Claims 33-36 of U.S. Patent No. 6,277,258 claim the same limitations given by instant claims 48-51.

Ivory et al disclose a means for dynamically controlling the voltage applied to an electrode array in a similar device. (Column 8, line 55 - Column 9, line 53)

Koegler et al also disclose a means for dynamically controlling the voltage applied to an electrode array in another similar device. (Future Directions section)

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the device of Claims 32-36 of U.S. Patent No. 6,277,258 by providing a means of dynamic control of the electrode voltages, as taught by either Ivory et al or Koegler et al, because it would provide facile and precise control of electric field gradients in the device.

20. Claim 58 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 37 of U.S. Patent No. 6,277,258 in view of either Ivory et al (U.S. 5,298,143) or Koegler et al (*Biotechnol. Prog.* 1996).

Claim 37 of U.S. Patent No. 6,277,258 claims a device including all limitations of instant claim 58 except for dynamic control of the electric field gradient

Ivory et al disclose a means for dynamically controlling an electric field gradient in a similar device. (Column 8, line 55 - Column 9, line 53)

Koegler et al also disclose a means for dynamically controlling an electric field gradient in another similar device. (Future Directions section)

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the device of Claim 37 of U.S. Patent No. 6,277,258 by providing a means of dynamic control of the electric field gradient, as taught by either Ivory et al or Koegler et al, because it would provide facile and precise control of an ongoing separation.

21. Claims 63 and 69 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 38 and 42 of U.S. Patent No. 6,277,258 in view of claim 25 of U.S. Patent No. 6,277,258. Although the conflicting claims are not identical, they are not patentably distinct from each other because claim 25 shows the utility of the devices and methods of U.S. Patent No. 6,277,258 in separating the molecules listed in the instant claims.

22. Claim 71 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 32 of U.S. Patent No. 6,277,258. Although the conflicting claims are not identical, they are not patentably distinct from

each other because the recitation of lines 5-21 of claim 32 defines a device equivalent to that of lines 4-10 of the instant claim.

23. Claims 72, 74, and 76 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 7 of U.S. Patent No. 6,277,258 in view of Ivory et al (U.S. 5,298,143) and Koegler et al (*Biotechnol. Prog.* 1996).

Claim 7 of U.S. Patent No. 6,277,258 claims a device including all limitations of instant claim 72 (First and second chambers defined by the troughs and the membrane), except the controller, analytical instrument, and interface limitations.

Claim 7 also does not explicitly disclose a controller that dynamically monitors and sets the voltage at the electrodes in response to signals from the operator (Claim 74), or a system that includes an optical or potentiometric analytical device. (Claim 76)

Ivory et al discloses a controller comprising a plurality of controller units (Figure 17) in communication with an electrode array of a similar gradient focusing device. This controller dynamically monitors and sets the voltage at the electrodes in response to signals from an operator. (Column 9, lines 26-31).

Koegler et al disclose an optical analytical instrument and interface of this instrument with the device. (Spectrophotometer and fittings, Equipment section 4<sup>th</sup> paragraph)

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the device of Claim 7 of U.S. Patent No. 6,277,258 by

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providing a controller with plural controller units in communication with the electrode array, that dynamically monitors and sets the voltage under user control, as taught by Ivory et al, because it would provide precise control of the separation device.

It would also have been obvious to one having ordinary skill in the art at the time the invention was made to modify the combination of Claim 7 of U.S. Patent No. 6,277,258 and Ivory et al by providing an optical analytical instrument interfaced with the separation device, as taught by Koegler et al, because it would allow accurate removal of fractions of analytes from the chamber.

24. Claim 73 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 7 of U.S. Patent No. 6,277,258 in view of Ivory et al and Koegler et al as applied to claim 72 above, and further in view of Hurd. (U.S. 4,670,119)

Claim 75 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 7 of U.S. Patent No. 6,277,258 in view of Ivory et al and Koegler et al as applied to claim 72 above, and further in view of Arai.

Claim 77 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 7 of U.S. Patent No. 6,277,258 in view of Ivory et al and Koegler et al as applied to claim 72 above, and further in view of Cabilly et al.



The material disclosed by the combination of claim 7 of U.S. Patent No. 6,277,258 with Ivory et al and Koegler et al is as described above in paragraph 19.

The material not disclosed by this combination; the disclosures of Hurd, Arai, and Cabilly; and the motivation for combination with these references are all as described above in paragraphs 8, 9, and 10.

### ***Response to Arguments***

25. Applicant's arguments filed 6 January 2004 have been fully considered but they are not persuasive.

#### ***Regarding rejections under 35 U.S.C. §102(b)***

Regarding Koegler et al, Applicants argue that this reference does not provide an enabling disclosure for the limitation to "means for dynamically controlling the voltage applied to the array." Applicants cite quotations from the Koegler et al reference, noting its speculative nature, and pointing out that "mere naming or description of the subject matter is insufficient if it cannot be produced without undue experimentation."

(Amendment pages 7-8)

Examiner considers that the very general instant limitation to "means for dynamically controlling the voltage" is enabled by the very general disclosure of Koegler et al that "... it is possible to manipulate the electric field gradient from outside the column by using a plurality of independent electrodes . . ." and that "this allows the possibility that the field could be dynamically 'shaped' during a run to improve

performance.” Since no particular requirements for the “dynamic control” are recited in the claim, none are read into it. All that is required is a change in the voltage application during the course of the run, which is certainly enabled by the disclosure of Koegler et al.

Regarding Applicants’ contention that undue experimentation would be needed to produce a dynamically shaped field (Amendment, page 8, lines 12-22), Examiner submits that this is not the object of the claim limitation. Dynamic control is claimed, and with the general limitation presented, any modification of the field in the course of the separation - even turning off the field to allow elution of residual proteins - would meet this limitation as currently recited. No skilled or precise “shaping” is required by the claim language, only a change in the applied voltage. Applicants also point out that the instant specification discloses correct geometry, spacing, and composition of electrodes for creating the dynamic gradient, in contrast to the disclosure of Koegler et al. Examiner respectfully submits that these issues are not addressed in the claim limitations, and are therefore not pertinent.

Applicants argue that the electrode array of Koegler et al is not two-dimensional. (Amendment, page 8, lines 2-24) The Examiner maintains that a broad reading of the limitation would encompass an array of two-dimensional electrodes.

*Regarding rejections under 35 U.S.C. §103(a)*

Applicants assert that there is no suggestion or motivation in Koegler et al, Ivory et al, or the knowledge available to one of skill in the art for the combination of Koegler

et al with Ivory et al as put forth in these rejections. (Amendment, page 9) The Examiner maintains that Kogler's statement that, "... it is possible to manipulate the electric field gradient from outside the column by using a plurality of electrodes ..." is a strong suggestion that an array of electrodes used for the same purpose in a closely-related prior art system, such as that disclosed by Ivory et al, would be suitable for such a modification.

Regarding the argument that the array of electrodes disclosed by Ivory et al would have resulted in severe peak smearing (Page 9, lines 2-5), it is not apparent to the Examiner that this is the case, in the embodiment of Figure 16, Ivory et al disclose an electrode array of symmetric circular electrodes (Column 8, lines 17-24), which appear in all respects similar to those used by Kogler et al, except that several are disposed along the chamber length, instead of one at each end. As required by the Applicants, the array of Ivory et al appears to comprise symmetric circular electrodes, which would provide a uniform field distribution across the chamber cross section.

For at least these reasons and those presented in the rejections repeated above, the rejections are deemed proper and are maintained.

### ***Conclusion***

26. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

27. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dr. Jeffrey Barton, whose telephone number is (571) 272-1307. The examiner can normally be reached Monday-Friday from 8:30 am – 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen, can be reached at (571) 272-1342. The fax number for the organization where this application or proceeding is assigned is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at (866) 217-9197 (toll-free).

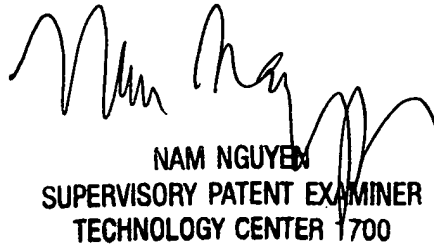
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JTB

March 4, 2005



NAM NGUYEN  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 1700